Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL QUALITY MEASURES CLEARINGHOUSE

General

Title

High body mass index (BMI) follow-up: percentage of children ages 2 through 17 years with a BMI greater than or equal to 85th percentile whose parents were surveyed and reported that their provider discussed their child's weight or BMI during an outpatient care visit in the last 12 months.

Source(s)

Quality Measurement, Evaluation, Testing, Review, and Implementation Consortium (Q-METRIC). Basic measure information: parent report of discussion of weight concerns for child. Ann Arbor (MI): Quality Measurement, Evaluation, Testing, Review, and Implementation Consortium (Q-METRIC); 2015 Apr. 49 p.

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Patient Experience

Secondary Measure Domain

Clinical Quality Measure: Process

Brief Abstract

Description

This measure is used to assess the percentage of children ages 2 through 17 years with a body mass index (BMI) greater than or equal to 85th percentile whose parents were surveyed and reported that their provider discussed their child's weight or BMI during an outpatient care visit in the last 12 months. A higher proportion indicates better performance. (Note: The word "parent" is inclusive of many caregivers, including biological parents, legal guardians, or other family members who are primary caregivers.)

Rationale

Obesity in children is associated with a broad spectrum of serious health issues, including obstructive sleep apnea, asthma, nonalcoholic fatty liver disease, type 2 diabetes mellitus, depression, orthopedic problems, and skin conditions (Barlow, 2007). While childhood obesity rates have stabilized over the past

decade, the percentage of young children and adolescents who are overweight or obese remains high (Ogden et al., 2014). For the 2011–2012 period, nearly 32% of children in the United States were reported to be either overweight or obese (having a body mass index [BMI] greater than or equal to 85th percentile on sex-specific age-for-growth charts), and 17% were obese (having a BMI greater than or equal to 95th percentile) (Ogden et al., 2014).

Raising parental awareness of a child's excess weight — and the associated health risks — is an essential first step in helping families make healthy changes that support appropriate weight levels. However, research shows that parents of overweight children have reported receiving too little advice from providers (Taveras et al., 2008) and that cultural beliefs often run contrary to medical guidance (Guendelman et al., 2010). Similarly, studies have also shown that providers often do not discuss weight issues with parents of overweight or obese patients or communicate in a way so that parents can retain the information (Perrin, Cockrell-Skinner, & Steiner, 2012). If health care providers discuss weight with families in a timely, informative, supportive, and culturally sensitive manner, they can foster the confidence and skills necessary for parents and children to address dietary and physical activity behaviors (Huang et al., 2007; Lindsay et al., 2011). Many issues exist that make these discussions difficult: uncertainty about appropriate language; lack of familiarity with guidelines; too little support and time in the clinic; concerns about stigmatization; parental misperceptions about normal versus overweight in their own children; and social systems that perpetuate misconceptions about feeding practices and health (Klein et al., 2010; Dietz & Robinson, 2005; Puhl, Peterson, & Luedicke, 2011; Doolen, Alpert, & Miller, 2009; Lindsay et al., 2011). It is important to recognize and address these issues, as families are crucial partners in dealing with weight issues and clinicians are an excellent source of appropriate guidance. Improving the frequency and quality of these conversations will help children reach and maintain a healthy weight.

Evidence for Rationale

Barlow SE, Expert Committee. Expert committee recommendations regarding the prevention, assessment, and treatment of child and adolescent overweight and obesity: summary report. Pediatrics. 2007 Dec;120(Suppl):S164-92. PubMed

Dietz WH, Robinson TN. Clinical practice. Overweight children and adolescents. N Engl J Med. 2005 May 19;352(20):2100-9. PubMed

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Perrin EM, Skinner AC, Steiner MJ. Parental recall of doctor communication of weight status: national trends from 1999 through 2008. Arch Pediatr Adolesc Med. 2012 Apr;166(4):317-22. PubMed

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Quality Measurement, Evaluation, Testing, Review, and Implementation Consortium (Q-METRIC). Basic measure information: parent report of discussion of weight concerns for child. Ann Arbor (MI): Quality Measurement, Evaluation, Testing, Review, and Implementation Consortium (Q-METRIC); 2015 Apr. 49 p.

Taveras EM, Gortmaker SL, Mitchell KF, Gillman MW. Parental perceptions of overweight counseling in primary care: the roles of race/ethnicity and parent overweight. Obesity (Silver Spring). 2008 Aug;16(8):1794-801. PubMed

Primary Health Components

High body mass index (BMI); weight; experience of care; children

Denominator Description

The eligible population for the denominator is the number of children ages 2 through 17 years with a body mass index (BMI) greater than or equal to 85th percentile whose parents were surveyed and indicated that their child had an outpatient care visit during the measurement year. See the related "Denominator Inclusions/Exclusions" field.

Numerator Description

The eligible population for the numerator is the number of children ages 2 through 17 years with a body mass index (BMI) greater than or equal to 85th percentile whose parents were surveyed and indicated their child had an outpatient care visit during the measurement year and reported that their provider discussed their child's weight or BMI during a subsequent outpatient care visit in the last 12 months. See the related "Numerator Inclusions/Exclusions" field.

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

A formal consensus procedure, involving experts in relevant clinical, methodological, public health and organizational sciences

A systematic review of the clinical research literature (e.g., Cochrane Review)

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Additional Information Supporting Need for the Measure

Importance

Childhood overweight and obesity are recognized as major medical and public health problems associated with serious medical complications over the life course, including conditions such as type 2 diabetes, metabolic syndrome, and hypertension (Speiser et al., 2005). As a result, early screening and identification of weight status in children is critical for both prevention and treatment of childhood overweight and obesity. Primary care providers measure weight and height at yearly visits throughout childhood and calculate body mass index (BMI) by dividing weight by height squared. Overweight is defined as a BMI of the 85th to 94th percentile, and obesity is defined as a BMI greater than or equal to 95th percentile (Barlow, 2007). Guidelines suggest that patients in the overweight category receive counseling about prevention; those who are obese are quite likely to have obesity-related health risks and should be encouraged to work on weight control practices. Parents are seen as key partners in helping children shape their eating and activity habits to appropriately achieve a healthy weight (Barlow, 2007).

Prevalence of Obesity and Unhealthy Weight in Children

Significant increases in the prevalence of childhood obesity in the United States (U.S.) across both sexes were seen in the 1980s and 1990s (Ogden et al., 2012). For the 2011–2012 period, nearly 32% of children in the United States were reported to be overweight or obese and at least 17% were obese (Ogden et al., 2014). At the population level, this increase in prevalence is too rapid to be a genetic shift. Rather, changes in eating and physical activity behaviors are affecting the intake and expenditure of energy, resulting in overweight and obesity (Barlow, 2007).

Cost of Obesity and Unhealthy Weight in Children

Excess weight in young people creates great economic burden. Children who are obese are approximately three times more expensive for the health care system than the average insured child, and children diagnosed with obesity are two to three times more likely to be hospitalized (Marder & Chang, 2006). In a study by Wang et al. (2008), the authors used projected overweight/obesity prevalence and national estimates of per capita excess health care costs of overweight/obesity to estimate that health care costs attributable to overweight/obesity in the entire U.S. population would reach between $861 and $957 billion by 2030, accounting for 16% to 18% of U.S. health care costs.

Pathology and Severity of Obesity and Unhealthy Weight in Children

Medical issues associated with obesity affect almost every organ of the body, though some conditions are without symptoms and signs (Barlow, 2007). Obese children are more likely to suffer from respiratory issues such as disordered breathing (Wing et al., 2003), which can lead to right ventricular hypertrophy and pulmonary hypertension, as well as inattention, poor academic performance, and enuresis (Barlow, 2007). Asthma also occurs more frequently among children who are obese (Barlow, 2007). Gastrointestinal problems include nonalcoholic fatty liver disease (NAFLD), which is related to both obesity and diabetes (Barlow, 2007); gallstones (Kaechele et al., 2006); and gastroesophageal reflux disease and constipation, which are worsened by obesity (Barlow, 2007). Obese children are more likely to have endocrine disorders such as abnormal glucose metabolism (sometimes called pre-diabetes), which indicates higher risk for the development of diabetes (Li et al., 2009); type 2 diabetes mellitus; polycystic ovary syndrome; and hypothyroidism (Barlow, 2007). Cardiovascular problems for overweight/obese children include dyslipidemia (Lamb et al., 2011) and hypertension (Barlow, 2007). Orthopedic problems include Blount disease (a visible bowing of the lower extremities), slipped capital femoral epiphysis, and an increased risk of fractures and musculoskeletal pain and orthopedic problems (Dietz, Gross, & Kirkpatrick, 1982; Manoff, Banffy, & Winell, 2005). Skin conditions include acanthosis nigricans, a chronic irritation and infection in the folds of the skin (Nguyen et al., 2001). Metabolic syndrome, a cluster of concurrent conditions (abnormal triglycerides, large waist circumference, and high blood pressure) that increase the risk of heart disease, stroke, and diabetes is not yet defined in children (Speiser et al., 2005). However, among severely obese children, the risk of developing metabolic syndrome has been estimated at 50% (Weiss et al., 2004).

Children who are obese also contend with psychiatric problems including depression, anxiety, and eating disorders (Barlow, 2007). One study found that among female adolescents who were obese, patterns of observation showed more adverse social, educational, and psychological correlates (Falkner et al., 2001).

Children who are obese may also be at risk for academic difficulties, alcohol and tobacco use, premature sexual behavior, inappropriate dieting practices, and physical inactivity (Daniels et al., 2009). Increasing weight is associated with decreasing health-related quality of life, lower body satisfaction, and low self-esteem. Children who are overweight experience more teasing and are vulnerable to bullying (Daniels et al., 2009). Children share society's negative opinions about those who are overweight or obese, regardless of their own weight status or sex (Speiser et al., 2005). Their perceptions of obesity emphasize laziness, selfishness, lower intelligence, social isolation, poor social functioning, as well as low levels of perceived health, healthy eating, and activity. Children as young as 5 years of age are aware of their own levels of overweight, which affects their perceptions of appearance, athletic ability, social competence, and self-worth (Speiser et al., 2005). Research has also shown that children diagnosed with obesity are much more likely to be diagnosed with mental health disorders or bone and joint disorders than children who are not obese; they are also two-to-three times more likely to be hospitalized (Marder & Chang, 2006).

Being overweight or obese in early life also has implications for a child's future health. First, for a child who is overweight, medical risks include future or persistent obesity (Barlow, 2007; Daniels et al., 2009). Being overweight or obese in childhood and adolescence is associated with increased risk of premature mortality and comorbidities in adulthood. A 2011 systematic review reports a significant association between child and adolescent overweight/obesity and premature mortality, with hazard ratios ranging from 1.4 to 2.9 (Reilly & Kelly, 2011). In addition, being overweight or obese as a child or adolescent is significantly associated with increased risk of cardiometabolic morbidity (including diabetes, hypertension, heart disease, and stroke) in later life, with hazard ratios ranging from 1.1 to 5.1, as well as increased risk of asthma in adulthood and polycystic ovary syndrome in adult women (Reilly & Kelly, 2011). Obesity in adolescence is associated with negative self-image that persists into adulthood (Dietz, 1998). These children are also at long-term higher risk for chronic conditions such as breast, colon, and kidney cancer; musculoskeletal disorders; and gall bladder disease (Daniels et al., 2009). Childhood obesity contributes to a significant and increasing burden of chronic disease, rising health care costs, disability, and premature death.

Performance Gap

Despite the clear benefits of providers counseling families about a child's weight status, many parents are literally not getting the message. In one study among children with a BMI greater than or equal to 85th percentile, only 22% of parents reported being told their child was overweight and only 58% of parents of very obese children recalled being told of their child's weight status (Perrin, Skinner, & Steiner, 2012). Other studies report similarly low numbers. Lazorick et al. (2011) found that documentation of counseling regarding nutrition and physical activity was rare: 16% for children ages 3 to 5 years old and 7% for ages 13 to 16 years old. Many of the overweight adolescents in this study already had comorbidities seen more frequently in adults. A third study reported a somewhat better rate of 51% for frequency of diet, exercise, and weight reduction counseling, but its authors noted the rate was still inadequate and did not address the depth or quality of counseling (Patel et al., 2010). Yet another study found that among overweight children, aged 2 to 19 years old, only 37% reported having ever been told by a provider that they were overweight (Centers for Disease Control and Prevention, 2005). Among those ages 2 to 5 years old, the rate was 17%, and from there it rose steadily: 33% for children ages 6 to 11 years old; 40% for ages 12 to 15 years old; and 52% for the oldest group, ages 16 to 19 years old. Research has further shown that overweight parents of overweight, but not obese, children reported receiving too little advice on nutrition and physical activity, compared with parents of obese children, and they rated the quality of the advice as poor or fair (Taveras et al., 2008).

Low rates of discussion are prevalent, but unacceptable. Children and families need help in addressing unhealthy weight. By the time children are of school age, they are already responding to environmental cues, not satiety, in deciding what they want to eat (Rolls, Engell, & Birch, 2000). By the age of 5 years, the amount of food offered influences how much a child eats; in younger children (age 3½ years), the amount of food presented did not affect the amount consumed. As children develop, food intake is affected by social, cultural, and environmental factors. Early recognition of this developmental change is important to helping children learn good habits.

See the original measure documentation for additional evidence supporting the measure.

Evidence for Additional Information Supporting Need for the Measure

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Quality Measurement, Evaluation, Testing, Review, and Implementation Consortium (Q-METRIC). Basic measure information: parent report of discussion of weight concerns for child. Ann Arbor (MI): Quality Measurement, Evaluation, Testing, Review, and Implementation Consortium (Q-METRIC); 2015 Apr. 49 p.

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Extent of Measure Testing

Reliability

This measure is based on parent survey data. The reliability of this measure was not separately tested; guidance from the National Quality Forum (NQF) indicates that separate reliability testing of data elements is not necessary if data element validity testing is conducted (NQF, 2011).

Although reliability was not tested per se, medical records were reviewed to determine the extent to which children with a parent-reported BMI greater than or equal to 85th percentile had a BMI greater than or equal to 85th percentile documented in the medical record. The reliability of the abstraction process

was evaluated through an assessment of inter-rater reliability (IRR) between abstractors.

The data for this measure was obtained through a survey conducted by HealthCore, Inc. HealthCore is an independent subsidiary of Anthem, Inc., the largest health benefits company/insurer in the United States. HealthCore owns and operates the HealthCore Integrated Research Database (HIRD), a longitudinal database of medical and pharmacy claims and enrollment information for members from 14 geographically diverse Blue Cross and/or Blue Shield Health Plans in the Northeast, South, West, and Central regions of the United States with members living in all 50 states. In total, the HIRD includes approximately 59 million individuals between January 2006 and June 2014.

More than 12 million members were enrolled at some point during the 2013 measurement year for this study, among which 2.3 million were aged 2 to 18 years old. There were 637,100 children aged 2 to 18 years old with a routine outpatient encounter in 2013, who were currently enrolled and were fully insured. This group was narrowed to a subset who had a provider with a specialty of pediatric medicine or general practice/family practice (451,003). One child per family was then randomly selected, resulting in 293,741 eligible children from all 50 states, as well as the District of Columbia and territories such as Puerto Rico and the Virgin Islands.

A simple random sample (SRS) was used to select 27,000 candidates for a parent survey, of which 26,569 (98%) had valid contact information. From this group, a total of 1,580 parent surveys were completed, of which 416 had a BMI greater than or equal to 85th percentile according to parent-reported height and weight for their eligible child.

To evaluate the validity of the survey data, medical records for a portion of the children represented in the survey were reviewed. Due to incomplete provider information for 14 children, charts for 402 of the 416 children with BMI greater than or equal to 85th percentile (based on parent-reported height and weight) were requested from provider offices and health care facilities, and 298 (74%) were received at a centralized location for data abstraction.

Trained medical record abstractors collected and entered information from paper copies of the medical records into a password protected database. To help ensure consistency of data collection, the abstractors were trained on the study's design and presented with a standardized data collection form designed to minimize subjective judgments during the abstraction process. In addition, data entered onto a scanner form and subsequently scanned was reviewed through a series of quality checks.

Reliability of medical record data was determined through re-abstraction of patient record data to calculate the IRR. Broadly, IRR is the extent to which the abstracted information is collected in a consistent manner. Low IRR may be a sign of poorly executed abstraction procedures, such as ambiguous wording in the data collection tool, inadequate abstractor training, or abstractor fatigue. For this measure, the medical record data collected by two abstractors was individually compared with the data obtained by a senior abstractor to gauge the IRR for each abstractor. Any differences were remedied by review of the chart. IRR was determined by calculating both percent agreement and Cohen's Kappa statistic.

Results. Data were abstracted from the medical records of 298 children represented in the survey with BMI greater than or equal to 85th percentile (according to parent-reported height and weight). From this sample, 56 children (19%) had documentation of BMI percentile in the medical record. Of these, four to eight records (7% to 14%) from the two abstractors were reviewed for IRR. Agreement was assessed for three measures variables: documentation of BMI percentile greater than or equal to 85th percentile and documentation of both height and weight (necessary to calculate BMI).

Abstractor agreement for all three measures variables (BMI greater than or equal to 85th percentile, height, and weight) was 100% with a Kappa statistic of 1 (refer to Table 3 in the original measure documentation). These results indicate that a perfect level of IRR was achieved for each measure variable.

Validity

Face Validity. Face validity is the degree to which the measure construct characterizes the concept being

assessed. The face validity of this measure was established by a national panel of experts and advocates for families of children with high BMI convened by the Quality Measurement, Evaluation, Testing, Review, and Implementation Consortium (Q-METRIC). The Q-METRIC expert panel included nationally recognized experts in childhood obesity, representing pediatrics, nephrology, nutrition and dietetics, endocrinology, gastroenterology, health behavior/education, and family advocacy. In addition, measure validity was considered by experts in state Medicaid program operations, health plan quality measurement, health informatics, and health care quality measurement. In total, the Q-METRIC High BMI Follow-Up panel included 17 experts, providing a comprehensive perspective on childhood obesity and the measurement of quality metrics for states and health plans.

The Q-METRIC expert panel concluded that this measure has a high degree of face validity through a detailed review of concepts and metrics considered to be essential to effective management and treatment of childhood obesity. Concepts and draft measures were rated by this group for their relative importance. This measure was very highly rated, receiving an average score of 7.9 (with 9 as the highest possible score).

Parent Survey Data. The eligible population for the denominator is the number of children ages 2 through 17 years with a BMI greater than or equal to 85th percentile, whose parents were surveyed and had an outpatient care visit during the measurement year. This measure was tested using two methods for determining the denominator:

> *Parent-reported Height and Weight*. Calculated BMI greater than or equal to 85th percentile based on height and weight reported by a parent.
> *Recorded Height and Weight*. Calculated BMI greater than or equal to 85th percentile based on height and weight recorded in the medical record.

This measure was tested using data from 1,580 parents who completed an online survey; 134 (8.5%) parents with children either younger than 2 years or age 18 years or older at time of survey were excluded from subsequent analysis. Of the remaining 1,446 parents, a total of 416 (28.8%) children were classified as BMI greater than or equal to 85th percentile, based on parent-reported height and weight. Among this group 83 (20%) of surveyed parents reported that their provider discussed their child's weight or BMI during an outpatient care visit in the previous calendar year (refer to Table 4 in the original measure documentation). Among the 298 (18.9%) children whose parents were surveyed and had medical record data, there were 146 (49.0%) children classified as BMI greater than or equal to 85th percentile based on height and weight recorded in the medical record. Among this group of surveyed parents, 35 (24%), reported that their provider discussed their child's weight or BMI during an outpatient care visit in the last 12 months (refer to Table 4 in the original measure documentation).

Evidence for Extent of Measure Testing

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State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Ambulatory/Office-based Care

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Individual Clinicians or Public Health Professionals

Statement of Acceptable Minimum Sample Size

Specified

Target Population Age

Age 2 through 17 years

Target Population Gender

Either male or female

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Person- and Family-centered Care
Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

Getting Better

Living with Illness

IOM Domain

Effectiveness

Patient-centeredness

Data Collection for the Measure

Case Finding Period

January 1 of the year prior to the measurement year through December 31 of the measurement year

Denominator Sampling Frame

Patients associated with provider

Denominator (Index) Event or Characteristic

Clinical Condition

Encounter

Patient/Individual (Consumer) Characteristic

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions
The eligible population for the denominator is the number of children ages 2 through 17 years with a body mass index (BMI) greater than or equal to 85th percentile whose parents were surveyed and indicated that their child had an outpatient care visit during the measurement year.

Note: Refer to Table 1 in the original measure documentation for codes to identify outpatient care visits.

Exclusions

Inpatient stays, emergency department visits, and urgent care visits are excluded from the calculation.
A diagnosis of pregnancy during the measurement year excludes the patient from the calculation.

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions
The eligible population for the numerator is the number of children ages 2 through 17 years with a body mass index (BMI) greater than or equal to 85th percentile whose parents were surveyed and indicated their child had an outpatient care visit during the measurement year and reported that their provider discussed their child's weight or BMI during a subsequent outpatient care visit in the last 12 months.

Parent-reported discussion is defined as an affirmative response to the question: "During the _____ calendar year, did your provider discuss any concerns/worries about your child's weight or body mass index (BMI)?"

Note: Refer to Table 1 in the original measure documentation for codes to identify outpatient care visits.

Exclusions
Unspecified

Numerator Search Strategy

Fixed time period or point in time

Data Source

Electronic health/medical record

Paper medical record

Patient/Individual survey

Type of Health State

Does not apply to this measure

Instruments Used and/or Associated with the Measure

Unspecified

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Rate/Proportion

Interpretation of Score

Desired value is a higher score

Allowance for Patient or Population Factors

not defined yet

Standard of Comparison

not defined yet

Identifying Information

Original Title

Parent report of discussion of weight concerns for child.

Measure Collection Name

High Body Mass Index (BMI) in Children Follow-up Measures

Submitter

Quality Measurement, Evaluation, Testing, Review, and Implementation Consortium (Q-METRIC) - Academic Affiliated Research Institute

Developer

Quality Measurement, Evaluation, Testing, Review, and Implementation Consortium (Q-METRIC) - Academic Affiliated Research Institute

Funding Source(s)

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Composition of the Group that Developed the Measure

High BMI in Children Follow-Up Expert Panels

Representative Panel

Adam Becker, PhD, MPH, Executive Director, Consortium to Lower Obesity in Chicago Children (CLOCC), Chicago, IL
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This is the current release of the measure.

The measure developer reaffirmed the currency of this measure in January 2016.

Measure Availability

Source available from the Quality Measurement, Evaluation, Testing, Review, and Implementation Consortium (Q-METRIC) Web site . Support documents are also available.

For more information, contact Q-METRIC at 300 North Ingalls Street, Room 6C08, SPC 5456, Ann Arbor, MI 48109-5456; Phone: 734-232-0657; Fax: 734-764-2599.

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